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CONCEPT OF A LIGHTWEIGHT HEAVY TRUCK FRAME FOR INCREASED TRANSPORTATION EFFICIENCY

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ABSTRACT - This new lightweight truck frame benefits from an increased load capacity as well as from a better vehicle handling because of the higher frame stiffness. The achievable weight reduction can be up to thirty percent - that also means a reduction of the material used which guarantees a better CO₂ balance, from production to recycling. The frame concept in “monocoque” layout has a high number of multifunctional parts to save components, especially fixing and bending parts. The fuel tank - embedded in the belly of the “monocoque” for optimal weight balance and maximum package volume - might also be replaced by batteries or gas tanks if an alternative propulsion system will be installed. The frame concept module-system meets different demands in terms of the wheelbase’s flexibility and others. All components are optimized for on-road conditions and motorway use as the closed body ensures a minimal air drag. By using innovative materials and joining techniques, the mass can be even further reduced. All in all, the new lightweight truck provides all the quality standards of a state-of-the-art transport vehicle, saving resources on the one hand and offering high safety and comfort aspects on the other hand.